**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (original) An imaging method comprising:

displacing an imaging device in one dimension while acquiring an image of an object, thereby blurring the image; and

deconvolving the blurred image to generate a multidimensional representation of the object.

2. (original) An imaging method comprising:

varying the focus of an imaging device while acquiring an image of an object, thereby blurring the image; and

deconvolving the blurred image to generate a representation of the object.

3. (original) The method of claim 2, the representation comprising a two dimensional projection image of three dimensions of the object.

4. (original) The method of claim 2, the imaging device comprising a fluorescence imaging device.

5. (original) The method of claim 2, varying the focus occurring while a shutter of the imaging device is open.

6. (original) The method of claim 2, varying the focus comprising varying an input voltage to a piezoelectric focusing mechanism of the imaging device.

7. (currently amended) An imaging method comprising:

varying the focus of an imaging device while acquiring an image of an object, thereby blurring the image; and

deconvolving the blurred image to generate a representation of the object, ~~The method of claim 2~~, varying the focus comprising applying signals to a piezoelectric focusing mechanism of the imaging device to generate oscillatory movement of the focusing mechanism.

8. (currently amended) An imaging method comprising:

varying the focus of an imaging device while acquiring an image of an object, thereby blurring the image; and

deconvolving the blurred image to generate a representation of the object, and ~~The method of claim 2~~, varying the focus comprising launching a velocity-controlled focus change using the a stand-based focusing mechanism.

9. (original) The method of claim 2, acquiring the image being accomplished in two or more stages.

10. (original) An imaging method comprising:

(a) collecting an acquired image of an object using an imaging device;

(b) varying the focus of the imaging device while collecting the acquired image, thereby blurring the acquired image;

(c) determining a point spread function (PSF) associated with the imaging device;

(d) determining an optical transfer function (OTF) using the PSF;

(e) determining an object estimate;

(f) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(g) comparing the estimated image with the acquired image to obtain a ratio;

(h) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(i) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(j) repeating steps (f) through (i) one or more times to generate a two dimensional projection image of three dimensions of the object from the updated object estimate.

11. (original) The method of claim 10, the imaging device comprising a fluorescence imaging device.

12. (original) The method of claim 10, the imaging device comprising a photosensitive camera chip.

13. (original) The method of claim 10, collecting the acquired image comprising stopping a continual clearing of the imaging device.

14. (currently amended) An imaging method comprising:

(a) collecting an acquired image of an object using an imaging device;

(b) varying the focus of the imaging device while collecting the acquired image, thereby blurring the acquired image;

(c) determining a point spread function (PSF) associated with the imaging device;

(d) determining an optical transfer function (OTF) using the PSF;

(e) determining an object estimate;

(f) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(g) comparing the estimated image with the acquired image to obtain a ratio;

(h) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(i) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(j) repeating steps (f) through (i) one or more times to generate a two dimensional projection image of three dimensions of the object from the updated object estimate, and ~~The method of claim 10,~~ collecting the acquired image comprising opening a shutter of the imaging device.

15. (original) The method of claim 14, varying the focus occurring while a shutter of the imaging device is open.

16. (currently amended) An imaging method comprising:

(a) collecting an acquired image of an object using an imaging device;

(b) varying the focus of the imaging device while collecting the acquired image, thereby blurring the acquired image;

(c) determining a point spread function (PSF) associated with the imaging device;

(d) determining an optical transfer function (OTF) using the PSF;

(e) determining an object estimate;

(f) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(g) comparing the estimated image with the acquired image to obtain a ratio;

(h) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(i) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(j) repeating steps (f) through (i) one or more times to generate a two dimensional projection image of three dimensions of the object from the updated object estimate, and ~~The method of claim 10,~~ varying the focus comprising varying an input voltage to a piezoelectric focusing mechanism of the imaging device.

17. (currently amended) An imaging method comprising:

(a) collecting an acquired image of an object using an imaging device;

(b) varying the focus of the imaging device while collecting the acquired image, thereby blurring the acquired image;

(c) determining a point spread function (PSF) associated with the imaging device;

(d) determining an optical transfer function (OTF) using the PSF;

(e) determining an object estimate;

(f) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(g) comparing the estimated image with the acquired image to obtain a ratio;

(h) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(i) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(j) repeating steps (f) through (i) one or more times to generate a two dimensional projection image of three dimensions of the object from the updated object estimate, and ~~The method of claim 10,~~ varying the focus comprising applying signals to a piezoelectric focusing mechanism of the imaging device to generate oscillatory movement of the focusing mechanism.

18. (currently amended) An imaging method comprising:

(a) collecting an acquired image of an object using an imaging device;

(b) varying the focus of the imaging device while collecting the acquired image, thereby blurring the acquired image;

(c) determining a point spread function (PSF) associated with the imaging device;

(d) determining an optical transfer function (OTF) using the PSF;

(e) determining an object estimate;

(f) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(g) comparing the estimated image with the acquired image to obtain a ratio;

(h) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(i) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(j) repeating steps (f) through (i) one or more times to generate a two dimensional projection image of three dimensions of the object from the updated object estimate, and ~~The method of claim 10,~~ varying the focus comprising launching a velocity-controlled focus change using the a stand-based focusing mechanism.

19. (currently amended) An imaging method comprising:

(a) collecting an acquired image of an object using an imaging device;

(b) varying the focus of the imaging device while collecting the acquired image, thereby blurring the acquired image;

(c) determining a point spread function (PSF) associated with the imaging device;

(d) determining an optical transfer function (OTF) using the PSF;

(e) determining an object estimate;

(f) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(g) comparing the estimated image with the acquired image to obtain a ratio;

(h) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(i) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(j) repeating steps (f) through (i) one or more times to generate a two dimensional projection image of three dimensions of the object from the updated object estimate, and ~~The method of claim 10,~~ acquiring the image being accomplished in two or more stages.

20. (original) An imaging system, comprising:

an imaging device configured to vary its focus while acquiring an image of an object; and

a processor in operative relation with the imaging device and configured to execute machine-readable instructions for deconvolving a resulting blurred image to generate a representation of the object.

21. (original) The system of claim 20, the representation comprising a two dimensional projection image of three dimensions of the object.

22. (original) The system of claim 20, the imaging device comprising a fluorescence imaging device.

23. (original) The system of claim 20, the instructions comprising instructions for:

(a) determining a point spread function (PSF) associated with the imaging device;

(b) determining an optical transfer function (OTF) using the PSF;

(c) determining an object estimate;

(d) convolving the object estimate with the PSF, using the OTF, to generate an estimated image;

(e) comparing the estimated image with the acquired image to obtain a ratio;

(f) convolving the ratio with a mirror image of the PSF, using a complex conjugate of the OTF, to form a convolved ratio;

(g) multiplying the object estimate with the convolved ratio to form an updated object estimate; and

(g) repeating steps (d) through (g) one or more times.

24. (original) A retrofit kit for converting an imaging system, comprising:

means for allowing an imaging device to vary its focus while acquiring an image of an object; and

means for deconvolving a blurred image to generate a two dimensional projection image of three dimensions of the object.